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Analog KVM Switch

AP5602

Installer/User Guide

USA Notification

Warning: Changes or modifications to this unit not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

Note: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

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This digital apparatus does not exceed the Class A limits for radio noise emissions from digital apparatus set out in the Radio Interference Regulations of the Canadian Department of Communications.

Le présent appareil numérique n'émet pas de bruits radioélectriques dépassant les limites applicables aux appareils numériques de la classe A prescrites dans le Règlement sur le brouillage radioélectrique édicté par le Ministère des Communications du Canada.

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APC: 990-3267
590-801-501A

Instructions

This symbol is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

Dangerous Voltage

This symbol is intended to alert the user to the presence of uninsulated dangerous voltage within the product’s enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.

Power On

This symbol indicates the principal on/off switch is in the on position.

Power Off

This symbol indicates the principal on/off switch is in the off position.

Protective Grounding Terminal

This symbol indicates a terminal which must be connected to earth ground prior to making any other connections to the equipment.

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CHAPTER 1

Product Overview

Features and Benefits

The APC AP5602 2x16 CAT5 Analog KVM switch integrates analog keyboard, video and mouse (KVM) switching technology with advanced cable management, flexible access for two simultaneous users, USB support and a patented, easy-to-use interface. This KVM switch supports all major server platforms and features on-screen management system configuration and server selection. The APC AP5602 2x16 CAT5 Analog KVM switch also features user peripheral ports for PS/2 and USB keyboards and mice.

Intelligent Server Module

A benefit of the CAT5 Analog KVM switch is the intelligent server module. The server module with CAT5 design dramatically reduces cable clutter, while providing optimal resolution and video settings. The built-in memory of the server module simplifies configuration by assigning and retaining unique server names and Electronic ID (EID) numbers for each attached server. The server module receives power from the server and provides Keep Alive functionality even if the KVM switch is not receiving power.

Each KVM switch has 16 rack interface ports for connecting server modules. Utilizing a server module, you can attach additional switches to expand your switching system. This flexibility allows you to add capacity as your data center grows.

Multiplatform support

The server module available with the AP5602 KVM switch supports PS/2, Sun™, USB and serial server environments. Using the OSD graphical user interface in conjunction with this module allows you to switch easily across platforms.

Two-User Share Mode

The AP5602 KVM switch features a Share Mode function that allows two users to gain access to a primary server. The user configurable time-out feature allows you to determine the amount of time (up to 600 seconds) for the target to remain idle before the other user can take control of the target.

OSD graphical user interface

APC AP5602 2x16 CAT5 Analog KVM switches use an OSD interface that features menus to configure your switching system and select servers. Servers can be identified by unique name, EID or port number, allowing you to assign unique server names.

Security

The OSD interface allows you to protect your system with a screen saver password. After a user-defined time, the screen saver mode engages and access is prohibited until the appropriate password is entered to reactivate the system.

Operation modes

The OSD user interface provides convenient operation modes for easy system administration of the KVM switch. These modes (Broadcast, Scan, Switch and Share) allow you to manage your switching activities. See “Basic Operations” on page 11.

Video

The AP5602 KVM switch provides optimal resolution for analog VGA, SVGA and XGA video. Achieve resolutions of up to 1600 x 1200 @ 75Hz with a 100 foot (30 meter) cable.

NOTE: Resolutions above 1280 x 1024 may need to be manually set in the operating system’s display settings. Video resolution and distance are subject to cable quality and environmental factors.

Plug and Play

The KVM switch also supports Display Data Channel (DDC) Plug and Play, which automates configuration of the monitor and is compliant with the VESA DDC2B standard.

Flash upgradable

Upgrade your firmware at any time through a simple update utility to ensure that your KVM switching system is always running the most current version available. Both the APC AP5602 2x16 CAT5 Analog KVM switch and the server modules are Flash upgradable. See “Flash Upgrades” on page 33.

Cascading expansion

Each APC AP5602 2x16 CAT5 Analog KVM switch supports up to 16 directly attached servers and can conveniently scale to support more. This extra “cascading” of units allows you to attach up to 256 servers in one system. See “Cascading AP5602 KVM Switches” on page 8.

Local user accounts

The APC AP5602 2x16 CAT5 Analog KVM switch enables an administrator to configure up to four user accounts for use with the switch. These user accounts allow the administrator to restrict what ports a class of user can access, as well as the name of the user account and password. See “Using Administrator Privileges” on page 31.

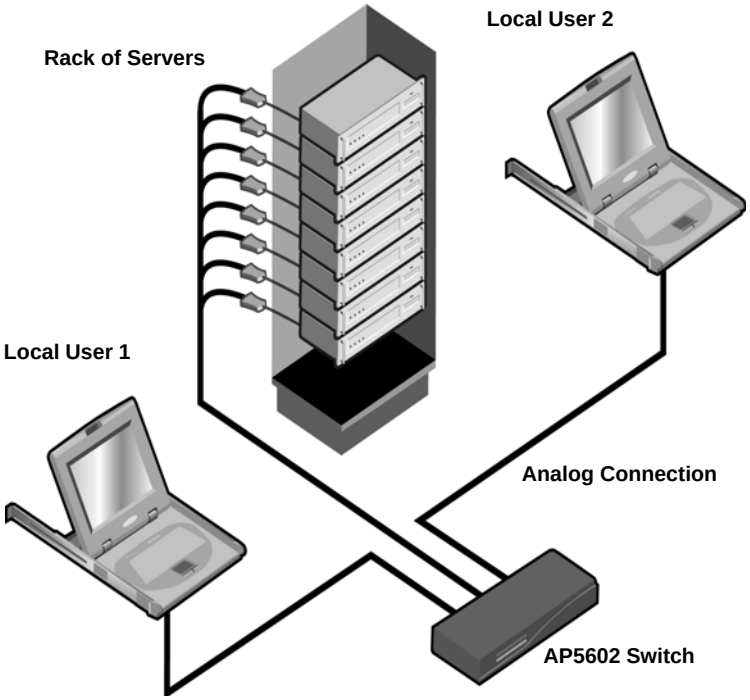

Figure 1.1: Example of an AP5602 KVM Switch Configuration

Safety Precautions

To avoid potential video or keyboard problems when using APC products:

- If the building has three-phase AC power, ensure that the computers and monitors are on the same phase. For best results, they should be on the same circuit.
- Use only APC-supplied cables to connect computers and KVM switches. APC warranties do not apply to damage resulting from user-supplied cable.

To avoid potentially fatal shock hazard and possible damage to equipment, observe the following precautions:

- Do not use a two-wire extension cord in any APC product configuration.

- Test AC outlets at the computer and monitor for proper polarity and grounding.
- Use the equipment only with grounded outlets at both the computer and monitor. When using a backup Uninterruptible Power Supply (UPS), supply power to the computer, the monitor and the AP5602 KVM switch from the UPS.

NOTE: The AC inlet is the main disconnect.

Rack mount safety considerations

- Elevated Ambient Temperature: In a closed rack assembly, the operation temperature of the rack environment may be greater than room ambient temperature. Use care not to exceed the rated maximum ambient temperature of the unit.
- Reduced Air Flow: Installation of the equipment in a rack should be such that the amount of airflow required for safe operation of the equipment is not compromised.
- Mechanical Loading: Mounting of the equipment in the rack should be such that a hazardous condition is not achieved due to uneven mechanical loading.
- Circuit Overloading: Consideration should be given to the connection of the equipment to the supply circuit and the effect that overloading of circuits might have on overcurrent protection and supply wiring. Consider equipment nameplate ratings for maximum current.
- Reliable Earthing: Reliable earthing of rack mounted equipment should be maintained. Pay particular attention to supply connections other than direct connections to the branch circuit (for example, use of power strips).

CHAPTER 2

Installation

Getting Started

Before installing your APC AP5602 switch, refer to the following list to ensure you have all items that shipped with the KVM switch, as well as other items necessary for proper installation.

- IEC C13 to 5-15P power cord
- IEC C13 to IE C14 power cord
- Null modem serial cable
- Rack mounting kit
- APC AP5602 2x16 CAT5 Analog KVM Switch Quick Installation Guide

Additional items needed

One server module and CAT5 cabling per attached server or switch

Rack Mounting Your AP5602 KVM switch

Your KVM switch may be rack mounted using the brackets supplied in your rack mounting kit. Before installing the switch and other components in the rack, stabilize the rack in a permanent location. Install your equipment starting at the bottom of the rack, then work to the top.

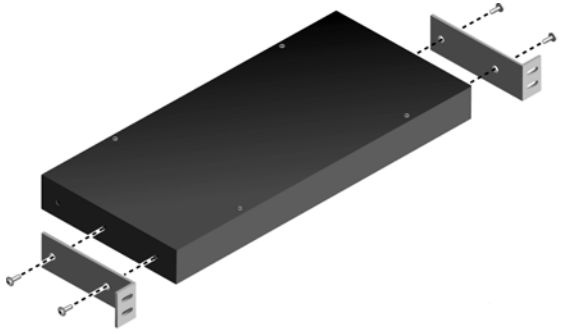

Figure 2.1: APC AP5602 Switch Horizontal Installation

CAUTION: Rack Loading - Overloading or uneven loading of racks may result in shelf or rack failure, causing damage to equipment and possible personal injury. Do not exceed your rack load rating.

To install the 1U switch mounting bracket:

1. Remove the first two screws on each side of the switch.
2. Line up the holes in the long side of the kit's side brackets with the screw holes in the switch.
3. With a Phillips screwdriver, fasten the mounting brackets to the switch using two screws on each side.
4. Attach four cage nuts or clip nuts to the rack mounting flange of the rack so that the nut is positioned on the inside of the rack.

NOTE: Cage nuts are not included with the rack mount kit.

5. Mount the switch assembly to the rack by matching the holes in the short side of each bracket to an appropriate set of matching holes on your rack.
6. Next, insert the combination hex head screws through the slots in the bracket and the holes in the mounting rail, then into the cage nuts or clip nuts.

Installing the AP5602 KVM Switch

Plug the supplied power cord into the back of the appliance and then into an appropriate power source. Figure 2.2 illustrates one possible configuration for your KVM switch. See the following detailed set of procedures to successfully install your appliance.

CAUTION: To reduce the risk of electric shock or damage to your equipment:
- Do not disable the power cord grounding plug. The grounding plug is an important safety feature.
- Plug the power cord into a grounded (earthed) outlet that is easily accessible at all times.
- Disconnect the power from the unit by unplugging the power cord from either the electrical outlet or the unit.

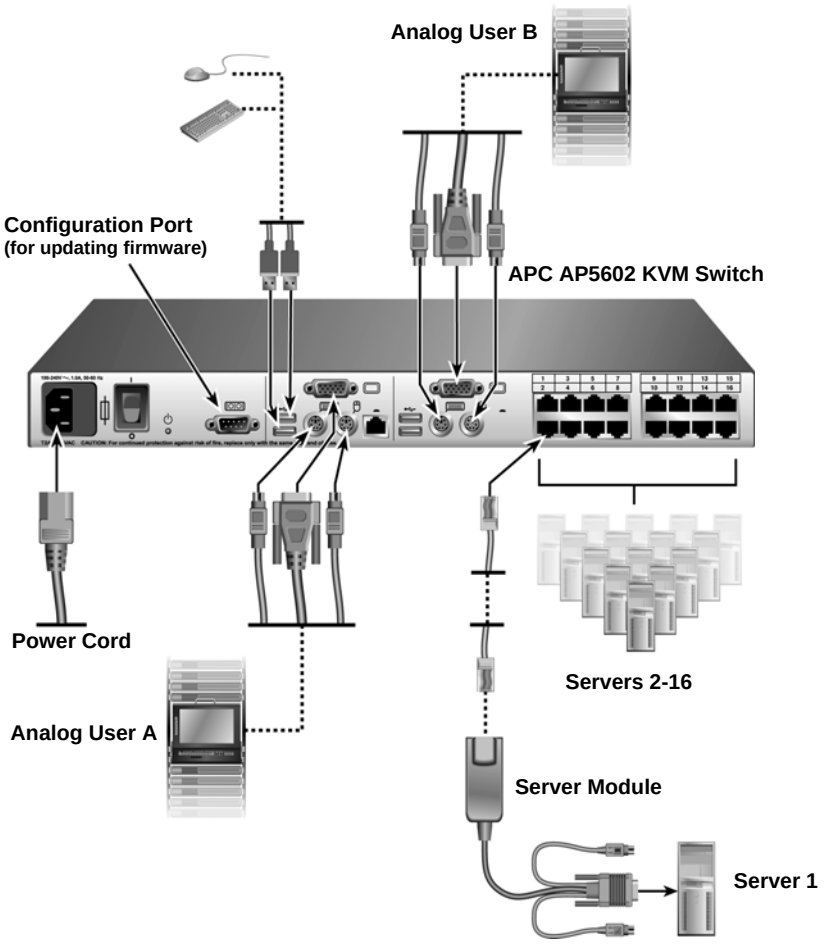

Figure 2.2: Basic AP5602 KVM Switch Configuration

NOTE: The APC AP5602 KVM switches support two simultaneous users.

To connect a server using a server module:

1. Locate the server modules for your KVM switch.
2. Attach the appropriately color-coded cable ends to the keyboard, monitor and mouse ports on the first server you will be connecting to the appliance.
3. Attach one end of a CAT5 cable to the RJ-45 connector on the server module.
4. Connect the other end of the CAT5 cable to the desired ARI port on the back of your APC AP5602 KVM switch.
5. Repeat steps 2 through 4 for each server to attach.

NOTE: When connecting a Sun server module, you must use a multi-sync monitor to accommodate Sun computers that support both VGA and sync-on-green or composite sync.

Connecting Users

To connect local peripheral devices:

1. Select the keyboard, monitor and mouse to be connected to local analog user A.
2. Locate the port set labeled A on the back of the appliance. Connect these peripherals to their respective ports.
3. Bundle and label the cables for easy identification.
4. Repeat steps 1-3 for user B.

Cascading AP5602 KVM Switches

You can cascade multiple APC AP5602 KVM switches to enable one or two users to connect to as many as 256 servers. In a cascaded system, each ARI (APC Rack Interface) port on the main KVM switch will connect to the ACI (APC Console Interface) port on each cascaded KVM switch. Each cascaded switch can then be connected to a server with a server module. The example shown in Figure 2.3 shows one KVM switch cascaded under the main switch, enabling the connection of up to 15 primary servers and 16 secondary servers. Using this configuration, you could cascade 16 AP5602 KVM switches under the main switch, enabling the connection of up to 256 servers. Only one level of tiering is supported in this type of configuration, which means you cannot cascade any additional switches.

In this configuration, the local port OSD interface is disabled in switches cascaded below the main AP5602 KVM switch.

To cascade multiple AP5602 KVM switches:

1. Connect the cascaded KVM switch to each server. See “Installing the AP5602 KVM Switch” on page 6.
2. Connect the local peripherals to analog user A or B of the main switch.
3. Attach one end of the CAT5 cabling to the RJ-45 ACI port on the cascaded KVM switch.

4. Attach the other end of the CAT5 cable to one of the RJ-45 ARI ports on the main AP5602 KVM switch.

NOTE: The system will automatically “merge” the two switches together as one. All servers connected to the cascaded KVM switch will display on the main switch server list in the OSD interface.

5. Repeat steps 3 and 4 for all additional (secondary) cascaded KVM switches.

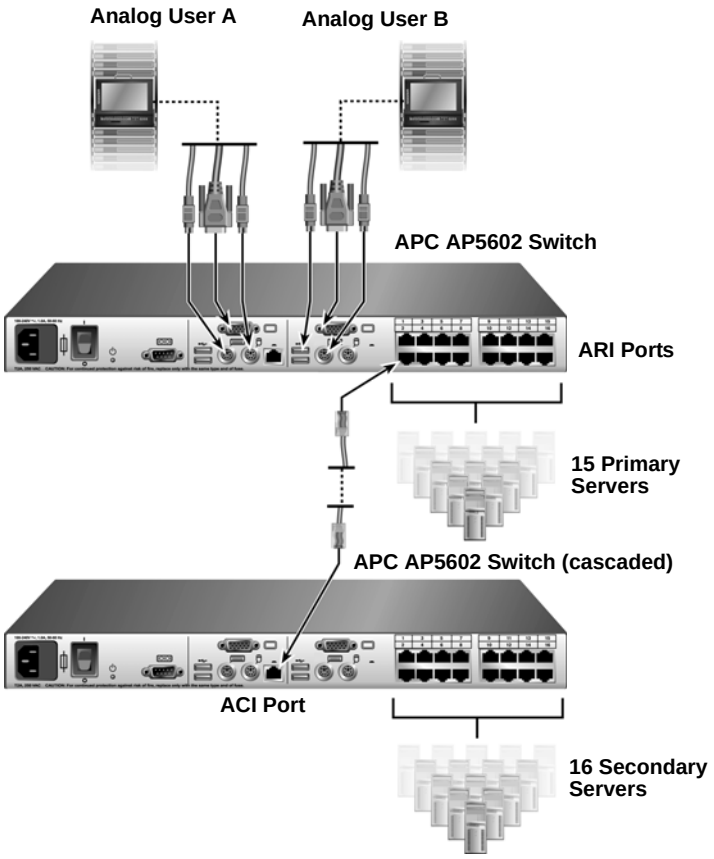

Figure 2.3: APC AP5602 KVM Switch Configuration with a Cascaded Switch

CHAPTER 3

Basic Operations

Controlling Your System at the Analog Ports

The AP5602 KVM switch features one or two analog port sets on the back of the switch that allow you to connect a monitor and a PS/2 or USB keyboard and mouse for direct analog access. The AP5602 KVM switch uses the OSD interface, featuring menus to configure your system and select servers.

Viewing and Selecting Ports and Servers

Use the OSD interface Main dialog box to view, configure and control servers in the AP5602 KVM switching system. View your servers by name, by port or by the unique Electronic ID number (EID) embedded in each server module. You will see an OSD interface-generated port list by default when you first launch the OSD GUI.

The Port column indicates the ARI port to which a server is connected. If you connect a KVM switch to the main AP5602 KVM switch or a cascaded AP5602 KVM switch, the port numbering displays the ARI port first, then the switch port to which the server is connected. For example: If the switch is connected to ARI port 6, the switch port would be listed as 06 and each server under it would be numbered sequentially 06-01, 06-02 and so on.

To access the Main dialog box:

Press **Print Screen** to launch the OSD interface. The Main dialog box displays.

Figure 3.1: Example of Configured Main Dialog Box

NOTE: You can also press the **Control** key twice, the **Alt** key twice or the **Shift** key twice within one second to launch the OSD interface. See “Changing the display behavior” on page 18. You can use this key sequence in any place you see **Print Screen** throughout this installer/user guide.

Viewing the status of your switch

The status of the servers in your system is indicated in the right columns of the Main dialog box. The following table describes the status symbols.

Table 3.1: OSD Interface Status Symbols

Symbol	Description
	Server modules are online (green circle).
	Server modules are offline or are not operating properly.
	Server is cascaded through a cascade switch. The switch is online and has power.
	Server is cascaded through a cascade switch. The switch is offline or has no power.
	Server module is being upgraded (yellow circle).
A	Server modules are being accessed by the indicated user channel (green channel letter).
A	Server modules are blocked by the indicated user channel (black channel letter).

Selecting servers

Use the Main dialog box to select servers. When you select a server, the switch reconfigures the keyboard and mouse to the proper settings for that server.

To select servers:

Double-click the server name, EID or port number.
-or-
If the display order of your server list is by port (*Port* button is selected), type the port number and press **Enter**.
-or-
If the display order of your server list is by name or EID number (*Name* or *EID* button is selected), type the first few characters of the name of the server or the EID number to establish it as unique and press **Enter**.

To select the previous server:

Press **Print Screen** and then **Backspace**. This key combination toggles you between the previous and current connections.

To disconnect the user from a server:

Press **Print Screen** and then **Alt+0**. This leaves the user in a free state, with no server selected. The status flag on your desktop displays *Free*.

Soft switching

Soft switching is the ability to switch servers using a hotkey sequence. You can soft switch to a server by pressing **Print Screen** and then typing the first few characters of its name or number. If you have set a Screen Delay Time and you press the key sequences before that time has elapsed, the OSD interface will not display.

To configure servers for soft switching:

1. Press **Print Screen** to launch the OSD interface. The Main dialog box displays.
2. Click *Setup - Menu.* The Menu dialog box displays.
3. For Screen Delay Time, type the number of seconds of delay desired before the Main dialog box is displayed after **Print Screen** is pressed.
4. Click *OK*.

To soft switch to a server:

1. To select a server, press **Print Screen**. If the display order of your server list is by port (*Port* button is selected), type the port number and press **Enter**.
   -or-
   If the display order of your server list is by name or EID number (*Name* or *EID* button is selected), type the first few characters of the name of the server or the EID number to establish it as unique and press **Enter**.

2. To switch back to the previous server, press **Print Screen,** then **Backspace**.

Navigating the OSD Interface

Table 3.2 describes how to navigate the OSD interface using the keyboard and mouse.

Table 3.2: OSD Interface Navigation Basics

Keystroke	Action
Print Screen,Ctrl-Ctrl Shift-Shift, or **Alt-Alt**	Activates the OSD interface. “Changing the display behavior” on page 18
Print Screen-Print Screen	Press **Print Screen** twice to send the **Print Screen** keystroke to the currently selected device.
F1	Opens the Help screen for the current dialog box.
Escape	Closes the current dialog box without saving changes and returns to the previous one. In the Main dialog box, it closes the OSD interface and returns to the flag. In a message box, it closes the pop-up box and returns to the current dialog box.
Alt+Hotkey	Opens dialog boxes, selects or checks options and executes actions when used with underlined or other designated letters.
Alt+X	Closes the current dialog box and returns to the previous one.
Alt+O	Selects the *OK* button, then returns to the previous dialog box.
Single-click, Enter	In a text box, selects the text for editing and enables the **Left** and **Right Arrow** keys to move the cursor. Press **Enter** again to quit the edit mode.
Enter	Completes configuration of a switch in the Main dialog box and exits the OSD interface.
Print Screen, Backspace	Returns the cursor to the previous selection.
Print Screen, Alt+0 (zero)	Immediately disengages a user from a server; no server is selected. Status flag displays *Free*. (This only applies to the **0** on the keyboard and not the keypad.)
Print Screen, Pause	Immediately turns on screen saver mode and prevents access to that specific console, if it is password protected.
Up/Down Arrows	Moves the cursor from line to line in lists.
Right/Left Arrows	Moves the cursor between columns. When editing a text box, these keys move the cursor within the column.
Page Up/Page Down	Pages up and down through Name and Port lists and Help pages.
Home/End	Moves the cursor to the top or bottom of a list.

Table 3.2: OSD Interface Navigation Basics (Continued)

Keystroke	Action
Delete	Deletes characters in a text box.
Page Up/Page Down	Pages up and down through Name and Port lists and Help pages.
Numbers	Type from the keyboard or keypad.
Print Screen, Ctrl+ F4	Logs the current user out of the switch (only available when Enable Local User Accounts is checked on the Security screen).

Configuring OSD Interface Menus

You can configure your AP5602 KVM switch from the Setup menu within the OSD interface. Select the *Names* button when initially setting up your switch to identify servers by unique names. Select the other setup features to manage routine tasks for your servers from the OSD interface menu.

Table 3.3: Setup Features to Manage Routine Tasks for Your Servers

Feature	Purpose
Menu	Sort the server listing numerically by port or EID number or alphabetically by name. Change the Screen Delay Time before the OSD interface displays after pressing **Print Screen**.
Flag	Change display, timing, color or location of the status flag.
Broadcast	Simultaneously control multiple servers through keyboard and mouse actions.
Scan	Set up a custom scan pattern for up to 16 servers.
Security	Set passwords to restrict server access. Enable the screen saver.
Devices	Identify the appropriate number of ports on an attached cascaded switch.
Names	Identify servers by unique names.
Switch	Choose the Switch Mode and the Share Mode time-out.
Keyboard	Choose the keyboard country code that is sent to the server module.
Language	Choose the language supported by the OSD. Change the OSD text language.
User	Allows the administrator to set up the Local User Accounts (only visible when Enable Local User Accounts is checked on the Security screen).

NOTE: The administrative user's name is case sensitive. You must log in as apc to utilize administrative functions.
When Enable Local User Accounts is disabled in the Security screen, only the Menu, Flag and Security screens are available to the users without administrator privileges. All other screens, except the User screen, are available to the administrator.

To access the Setup menu:

1. Press **Print Screen** to launch the OSD interface. The Main dialog box displays.
2. Click *Setup*. The Setup dialog box displays. See Table 3-3 on this page for the list of functions available to users and administrators.

Assigning server names

Use the Names dialog box to identify individual servers by name rather than by port number. The Names list is always sorted by port order. Names are stored in the server, so even if you move the server module or cable to another ARI port, the name and configuration will be recognized by the switch.

NOTE: If a server is turned off, its respective server module will not appear in the Names list.

To access the Names dialog box:

1. Press **Print Screen** to launch the OSD interface. The Main dialog box will appear.
2. Click *Setup - Names.* The Names dialog box displays.

NOTE: If a server list changes, the mouse cursor will turn into an hourglass as the list is automatically updated. No mouse or keyboard input will be accepted until the list update is complete.

To assign names to servers:

1. In the Names dialog box, select a server name or port number and click *Modify.* The Name Modify dialog box displays.
2. Type a name in the New Name box. Names of servers may be up to 15 characters long. Supported characters include: A to Z, a to z, 0 to 9, space and hyphen.
3. Click *OK* to transfer the new name to the Names dialog box. Your selection is not saved until you click *OK* in the Names dialog box.
4. Repeat steps 1 to 3 for each server in the system.
5. Click *OK* in the Names dialog box to save your changes.
   -or-
   Click *X* or press **Escape** to exit the dialog box without saving changes.

NOTE: If an server module has not been assigned a name, the EID is used as the default name.

Assigning device types

The AP5602 KVM switch automatically discovers cascaded KVM switches, but you will need to specify the number of ports on the cascaded switch through the Devices dialog box. Select the switch from the list and the Modify button displays, allowing you to assign it the appropriate number of ports.

NOTE: The Modify button will only be available if a configurable switch is selected.

To access the Devices dialog box:

1. Press **Print Screen** to launch the OSD interface. The Main dialog box will appear.
2. Click *Setup - Devices.* The Devices dialog box displays.

When the AP5602 KVM switch discovers a cascaded switch, you will notice the port numbering changes to accommodate each server under that switch. For example, if the switch is connected to ARI port 6, the switch port would be listed as 06 and each server under it would be numbered sequentially 06-01, 06-02 and so on.

To assign a device type:

1. In the Devices dialog box, select the desired port number.
2. Click *Modify*. The Device Modify dialog box displays.
3. Choose the number of ports supported by your cascaded switch and click *OK*. If the number of ports is not listed, click *Other* and type in a port number between 4 and 24 ports.
4. Repeat steps 1 to 3 for each port requiring a device type assignment.
5. Click *OK* in the Devices dialog box to save settings.

NOTE: Changes made in the Device Modify dialog box are not saved until you click *OK* in the Devices dialog box.

Changing the display behavior

Use the Menu dialog box to change the display order of servers, change the key sequence to launch the OSD interface and set a Screen Delay Time for the OSD interface. The display order setting alters how servers display in several screens including the Main, Devices and Broadcast dialog boxes.

To access the Menu dialog box:

1. Press **Print Screen** to launch the display of the OSD interface. The Main dialog box displays.
2. Click *Setup - Menu* in the Main dialog box. The Menu dialog box displays.

To choose the default display order of servers:

1. Select *Name* to display servers alphabetically by name.
   -or-
   Select *EID* to display servers numerically by EID number.
   -or-
   Select *Port* to display servers numerically by port number.
2. Click *OK*.

To set up key sequences to launch the OSD interface:

1. Click the box next to the key sequence you want to start the OSD interface. Unchecking all boxes will leave **Print Screen** as the default.
2. Click *OK*.

To set a Screen Delay Time for the OSD interface:

1. Type in the number of seconds (0 to 9) to delay the OSD interface after you press **Print Screen**. Entering **0** will instantly launch the OSD interface with no delay.

2. Click *OK*.

Setting a Screen Delay Time allows you to complete a soft switch without the OSD interface displaying. To perform a soft switch, *See "Soft switching" on page 13.*

Setting the keyboard country code

The AP5602 KVM switch can be configured to recognize a variety of keyboards. The default setting is for a US keyboard. To change this configuration, use the Keyboard dialog box to select a different keyboard country code.

NOTE: Ensure that the country code selected on your Sun server matches the Keyboard Country Code selected in the OSD interface or your keyboard will not be mapped correctly.

To change the keyboard country code:

1. Press **Print Screen** to launch the OSD interface. The Main dialog box will appear.
2. Click *Setup-Keyboard*. The Keyboard dialog box displays.
3. Select your keyboard country code and click *OK*.
4. A Keyboard Warning dialog box will appear to confirm your changes.
5. Click *OK* for changes to take effect.

Selecting a language

The Language dialog box allows you to select the language supported by the OSD and change the OSD text to that language.

To select a language:

1. Press **Print Screen** to launch the OSD interface. The Main dialog box will appear.
2. Click *Setup-Language*. The Language dialog box displays.
3. Select your language.
4. Click *OK* for changes to take effect.

Controlling the status flag

The status flag displays on your desktop and shows the name or EID number of the selected server or the status of the selected port. Use the Flag dialog box to configure the flag to display by server name or EID number, or to change the flag color, opacity, display time and location on the desktop.

Table 3.4: OSD Interface Status Flags

Flag	Description
	Flag type by name
	Flag type by EID number
	Flag indicating that the user has been disconnected from all systems
	Flag indicating that Broadcast Mode is enabled

To access the Flag dialog box:

1. Press **Print Screen**. The Main dialog box will appear.
2. Click *Setup* - *Flag*. The Flag dialog box displays.

To determine how the status flag is displayed:

1. Select *Name* or *EID* to determine what information will be displayed.
2. Select *Displayed* to show the flag all the time or select *Timed* to display the flag for only five seconds after switching.
3. Select a flag color in Display Color.
4. In Display Mode, select *Opaque* for a solid color flag or select *Transparent* to see the desktop through the flag.
5. To position the status flag on the desktop:
   a. Click *Set Position* to gain access to the Set Position Flag screen.
   b. Left-click on the title bar and drag to the desired location.
   c. Right-click to return to the Flag dialog box.

NOTE: Changes made to the flag position are not saved until you click *OK* in the Flag dialog box.

6. Click *OK* to save settings.
   -or-
   Click *X* to exit without saving changes.

Setting console security

The OSD interface enables you to set security on your analog port console. You can establish a screen saver mode that engages after your console remains unused for a specified Inactivity Time.

Once engaged, your console will remain locked until you press any key or move the mouse. You will then need to type in your password to continue.

Use the Security dialog box to lock your console with password protection, set or change your password and enable the screen saver.

NOTE: If a password has been previously set, you must enter the password before you can access the Security dialog box. If you lose or forget your password, contact APC Technical Support about returning your switch for service. See *Appendix D:Technical Support* for contact information.

To access the Security dialog box:

1. Press **Print Screen** to launch the OSD interface. The Main dialog box will appear.
2. Click *Setup - Security.* The Security dialog box displays.

NOTE: The Security screen is for the administrator and local user when the Enable User Accounts feature is turned off. The restricted user can only access the Change Password function of this screen.

To set or change the password:

1. Single-click and press **Enter** or double-click in the New text box.
2. Type the new password in the New text box and press **Enter**.
   Passwords must contain both alphabetic and numeric characters, are case sensitive and may be up to 12 characters long. Supported characters are: A to Z, a to z, 0 to 9, space and hyphen.
3. In the Repeat box, type the password again and press **Enter**.
4. Click *OK* to change only your password, and then close the dialog box.

To password protect your console:

1. Set your password as described in the previous procedure.
2. Select *Enable Screen Saver.*
3. Type the number of minutes for Inactivity Time (from 1 to 99) to delay activation of password protection and the screen saver feature.
4. For Mode, select *Energy* if your monitor is ENERGY STAR® compliant; otherwise select *Screen.*

CAUTION: Monitor damage can result from the use of Energy mode with monitors not compliant with ENERGY STAR.

5. (Optional) Click *Test* to activate the screen saver test which lasts 10 seconds then returns you to the Security dialog box.
6. Click *OK.*

To log in to your console:

1. Press any key or move the mouse.
2. The Password dialog box displays. Type your password, then click *OK*.

3. The Main dialog box displays if the password was entered properly.

To remove password protection from your console:

1. From the Main dialog box, click *Setup - Security*; the Password dialog box displays. Type your password, then click *OK*.
2. In the Security dialog box, single-click and press **Enter** or double-click in the New box. Leave the box blank. Press **Enter**.
3. Single-click and press **Enter** or double-click in the Repeat box. Leave the box blank. Press **Enter**.
4. Click *OK* to eliminate your password.

To enable local user accounts:

1. Click the *Enable Local User Accounts* checkbox.
2. Click *OK*. See “Advanced Operations” on page 31 for more information on setting up local user accounts.

To disable local user accounts (Admin user only):

1. Click *Enable Local User Accounts* to clear the checkbox and disable this option.
2. Click *OK*.

To enable the screen saver mode with no password protection:

1. If your console does not require a password to gain access to the Security dialog box, proceed to step 2.
   -or-
   If your console is password protected, see the previous procedure, then go to step 2.
2. Select *Enable Screen Saver.*
3. Type the number of minutes for Inactivity Time (from 1 to 99) to delay activation of the screen saver.
4. Choose *Energy* if your monitor is Energy Star compliant; otherwise select *Screen*.

CAUTION: Monitor damage can result from the use of Energy mode with monitors not compliant with ENERGY STAR.

5. (Optional) Click *Test* to activate the screen saver test, which lasts 10 seconds then returns you to the Security dialog box.
6. Click *OK*.

NOTE: Activation of the screen saver mode disconnects the user from a server; no server is selected. The status flag displays *Free*.

To exit the screen saver mode:

Press any key or move your mouse. The Main dialog box displays and any previous server connection will be restored.

To turn off the screen saver:

1. In the Security dialog box, clear *Enable Screen Saver.*
2. Click *OK*.

To immediately turn on the screen saver:

Press **Print Screen**, then press **Pause**.

Displaying Version Information

The OSD interface enables you to display the hardware and firmware versions of the AP5602 KVM switch, as well as the server module firmware. For optimum performance, keep your firmware current. For more information, “Flash Upgrades” on page 33

To display version information:

1. Press **Print Screen**. The Main dialog box will appear.
2. Click *Commands - Display Versions*. The Version dialog box displays. The top half of the box lists the subsystem versions in the appliance.
3. Click the *Target* button to view individual server module version information. The Target Selection dialog box displays.
4. Select a server module to view and click the *Version* button. The Target Version dialog box displays. For more information on loading firmware, see “Flash Upgrades” on page 33
5. Click the *Load Firmware* button to view the load firmware screen.

NOTE: Only the administrator can upgrade the firmware on a server module.

To decommission a server module:

Decommissioning a server module restores the factory defaults in Sun, USB and PS/2 server modules only.

1. Press **Print Screen**. The Main dialog box will appear.
2. Click *Commands - Display Versions*. The Version dialog box displays.
3. Click the *Target* button to view individual server module version information. The Target Selection dialog box displays.
4. Click the *Decommission* button.
5. Click *OK* to reset the server module to the factory default settings.

NOTE: Clicking *OK* in the Decommission screen will remove any assigned server names and will reset all configurable items while leaving the EID setting intact.

6. Click *X* to close the dialog box.

NOTE: The Load Firmware button will only display for a server module.

Scanning Your System

In Scan Mode, the appliance automatically scans from port to port (server to server). You can scan up to 16 servers, specifying which servers to scan and the number of seconds that each server will display. The scanning order is determined by placement of the server in the list. The list is always shown in scanning order. You can, however, choose to display the list sorted by server name or EID number by pressing the appropriate button.

To add servers to the scan list:

1. If the OSD interface is not open, press **Print Screen**. The Main dialog box will appear.
2. Click *Setup - Scan*. The Scan dialog box displays.
3. The dialog box lists all servers attached to your appliance. Mark the checkbox next to the servers to scan.
   -or-
   Double-click on a server's name or port.
   -or-
   Press **Alt** and the number of the server to scan. You can select up to 16 servers from the list.
4. In the Scan Time box, type the number of seconds (from 3 to 99) before the scan moves to the next server in the sequence.
5. Click *OK*.

To remove a server from the scan list:

1. In the Scan dialog box, clear the checkbox next to the server to be removed.
   -or-
   Double-click on the server's name or port.
   -or-
   Click the *Clear* button to remove all servers from the scan list.
2. Click *OK*.

To start the Scan Mode:

1. If the OSD interface is not open, press **Print Screen.** The Main dialog box will appear.
2. Click *Commands*. The Commands dialog box displays.

NOTE: The Commands screen is for the administrator and local user when the Enable User Accounts feature is turned off. The restricted user will only have access to the Display Versions, Device Reset and Log Out buttons.

3. Select *Scan Enable* in the Commands dialog box.
4. Click *X* to close the Commands dialog box.

NOTE: Scanning will begin when the Main dialog box or flag is displayed. Scanning is inhibited in any other OSD interface dialog box.

To cancel Scan Mode:

1. Select a server if the OSD interface is open.
   -or-
   Move the mouse or press any key on the keyboard if the OSD interface is not open. Scanning will stop at the currently selected server.
2. Press **Print Screen**. The Main dialog box will appear.
3. Click *Commands*. The Commands dialog box displays.
4. Clear *Scan Enable*.

Running System Diagnostics

You can validate the integrity of your system through the Run Diagnostics command. This command checks the main board functional sub-systems (memory, communications, switch control and the video channels) for each system controller. When you select the *Run Diagnostics* option, you will receive a warning indicating that all users (remote and local) will be disconnected. Click *OK* to confirm and begin the test.

The Diagnostics dialog box displays. The top section of the dialog box displays the hardware tests. The bottom portion divides the tested server modules into three categories: On-line, Offline or Suspect.

NOTE: Server modules may appear to be offline during the firmware upgrade.

Next to each item to be tested, a pass (green circle) or fail (red x) symbol displays to the left of each item as that test finishes. The following table details each of the tests.

Table 3.5: Diagnostic Test Details

Test	Description
Memory Tests	Reports on the condition of the main board RAM
Firmware CRCs	Reports on the condition of the main board RAM
Comm Interfaces	Validates the current firmware images stored in the system's Flash
Switch Controller test	Verifies the switch matrix controller is accessible and functional
Local Video	Indicates the condition of the local video monitor
On-line Targets	Indicates the total number of currently connected targets that are receiving power.

Table 3.5: Diagnostic Test Details (Continued)

Offline Targets	Indicates the number of targets that have been connected successfully in the past and are not receiving power.
Suspect Targets	Indicates the number of targets that have been detected, but are either unavailable for connection or have dropped packets during the ping tests

To run diagnostic tests:

1. If the OSD interface is not open, press **Print Screen**. The Main dialog box will appear.
2. Click *Commands - Run Diagnostics*. A warning message displays indicating that all users will be disconnected.
3. Click *OK* to begin diagnostics.
   -or-
   Click *X* or press **Escape** to exit the dialog box without running a diagnostic test.
4. All users are disconnected and the Diagnostics dialog box displays.
5. As each test is finished, a pass (green circle) or fail (red x) symbol displays. The test is complete when the last test's symbol displays.

Broadcasting to Servers

The analog user can simultaneously control more than one server in a system to ensure that all selected servers receive identical input. You can choose to broadcast keystrokes and mouse movements independently.

NOTE: You can broadcast to up to 16 servers at a time, one server per ARI port.

To access the Broadcast dialog box:

1. Press **Print Screen**. The Main dialog box will appear.
2. Click *Setup - Broadcast*. The Broadcast dialog box displays.

NOTE: Broadcasting Keystrokes - The keyboard state must be identical for all servers receiving a broadcast to interpret keystrokes identically. Specifically, the **Caps Lock** and **Num Lock** modes must be the same on all keyboards. While the appliance attempts to send keystrokes to the selected servers simultaneously, some servers may inhibit and thereby delay the transmission.

NOTE: Broadcasting Mouse Movements - For the mouse to work accurately, all systems must have identical mouse drivers, desktops (such as identically placed icons) and video resolutions. In addition, the mouse must be in exactly the same place on all screens. Because these conditions are extremely difficult to achieve, broadcasting mouse movements to multiple systems may have unpredictable results.

To broadcast to selected servers:

1. From the Broadcast dialog box, select the mouse or keyboard checkboxes for the servers that are to receive the broadcast commands.

-or-

Press the **Up** or **Down Arrow** keys to move the cursor to the target server. Then press **Alt+K** to select the keyboard checkbox or **Alt+M** to select the mouse checkbox. Repeat for additional servers.

2. Click *OK* to save the settings and return to the Setup dialog box. Click *X* or press **Escape** to return to the Main dialog box.
3. Click *Commands*. The Commands dialog box displays.
4. Click the *Broadcast Enable* checkbox to activate broadcasting. The Broadcast Enable Confirm/Deny dialog box displays.
5. Click *OK* to enable the broadcast. Click *X* or press **Escape** to cancel and return to the Commands dialog box.
6. If broadcasting is enabled, type the information or perform the mouse movements you want to broadcast from the switch. Only servers in the list are accessible.

NOTE: The other user is disabled when Broadcast Mode is enabled.

To turn broadcasting off:

From the Commands dialog box, clear the *Broadcast Enable* checkbox.

Changing Your Switch Mode

Your AP5602 KVM switch allows you to connect to attached servers using two methods: Preemptive and Cooperative.

Select *Preemptive* (default setting) to allow any user to select any server at any time; a request from another user disconnects the current user without warning.

-or-

Select *Cooperative* to maintain the current user connection; the current user will not be disconnected if another user requests connection.

To access the Switch dialog box:

1. Press **Print Screen**. The Main dialog box will display.
2. Click *Setup - Switch*. The Switch dialog box displays.
3. Select either *Preemptive* or *Cooperative* as your Switch Mode.
4. Click *OK* to save changes. Click *X* or press **Escape** to cancel.

Setting the Share Mode feature

The Share Mode feature of the AP5602 KVM switch allows two users to gain access to a primary server.

To enable Share Mode:

1. Press **Print Screen**. The Main dialog box will display.

2. Click *Setup - Switch*. The Switch dialog box displays.
3. Select *Share Enable* from the Switch dialog box.
4. Choose the amount of inactivity time for the target (up to 600 seconds) before another user can take control of the target.
5. Click *OK* to save changes. Click *X* or press **Escape** to cancel.

CHAPTER 4

Advanced Operations

Using Administrator Privileges

The AP5602 KVM switch allows up to four users and one administrator to log into a switch. The administrator can restrict users from accessing the targets by configuring settings in the Security menu. The administrator can edit, access or delete user accounts.

To access the User Setup screen (administrator only):

1. Click the *Enable User Account* checkbox in the Security menu. The Setup menu will appear.
2. Click the *OK* button.
3. Click the *User* button on the Setup screen to enter the User Setup screen.

NOTE: Clicking the *User* button on the Setup screen will automatically log out any currently logged in user. Other users will remain logged out until your changes are complete.

The User Setup menu allows the administrator to edit, access or delete a user account. The menu is only accessible if the Enable User Account checkbox is enabled in the Security menu. The AP5602 KVM switch has four standard user accounts, with the default names of User1, User2, User3 and User4.

To edit a user:

1. Click the user name of the user to be modified.
2. Click *Edit* to change the user name or password of the selected user.
3. Click *Access* to restrict port access for the selected user.
4. Click *Delete* to restore the selected user to the default state (default name, no password, no port access).
5. Click *OK* on the User Setup screen to save changes, or click the *Exit* button to escape without saving any changes.

User Edit menu (administrator only)

The Edit menu allows the administrator to set or change user names and passwords for all users.

The User name field displays default names that can be edited by the administrator. User names must be between 1 to 15 characters. Administrators can also set user passwords in the User Edit menu. Passwords must be between 5 to 12 characters and must contain at least one number and one alphabetic character. Administrators must verify new passwords by retyping the password in the Repeat Password field.

NOTE: Changes are not saved until the administrator clicks *OK* in the User Setup menu.

User Access menu (administrator only)

The Access menu displays each user name, port number and whether the user has access to the listed KVM ports. The administrator controls which ports are accessible to which user by clicking in the appropriate checkbox.

The *Clear All* button allows the administrator to clear access to all ports for a given user instead of deleting the account. The *Check All* button allows the administrator to assign all available KVM ports to any user.

NOTE: Changes are not saved to memory until the administrator clicks *OK* on the User Setup screen.

User Setup menu - Delete (administrator only)

The Delete button in the User Access menu allows an administrator to delete user accounts. Simply select an account from the menu and click the *Delete* button. The deleted user account will immediately return to default settings.

APPENDICES

Appendix A: Flash Upgrades

Upgrading the AP5602 KVM switch

You can upgrade the firmware of your AP5602 KVM switch by using a special update utility provided by APC. This utility automatically configures the port communication settings to allow direct downloading from the connected server.

Items needed for the upgrade

- Server running Microsoft Windows NT®, Windows® 95, Windows 98, Windows 2000 or Windows Server 2003.
- Available serial port (COM port) on the server
- Null modem serial cable (DB-male) that connects the switch and the server
- Firmware update files

To upgrade firmware:

1. Connect the standard serial cable to a COM port on the server and to the serial connector on the back panel of the switch. Make a note of which COM port you have chosen, then turn on the switch.
2. Go to www.apc.com/tools/download/ and navigate to your firmware upgrade file. Once the download is complete, navigate to the drive where you have saved the firmware update and unzip the file.
3. Double-click to run the ApplianceUpdate.exe utility.
4. Click the *Next* button to display the Main dialog box.
5. In the dialog box that displays, select the appropriate COM Port from the COM Port menu.
6. Click *Update*.
7. Once the firmware is updated, an *Update Complete* message displays. Click the *Close* button to exit the dialog box.
8. The switch automatically reboots after the upgrade is completed.

Possible error conditions

If the download does not execute properly, verify the following:

- Verify that the COM port is correct.
- Verify that no other program is currently using the COM port, or that no previous DOS window or shell is open that had used the COM port.
- Verify that no other copies of the ApplianceUpdate.exe utility are currently running.

- Verify that a null modem serial cable is used.
- In the selected COM port Advanced Port settings, verify that the FIFO buffers are selected and that the receive buffer is set to High.

CAUTION: While upgrading the firmware for your KVM switch, do not use your server for anything else or switch between windows. Close all other windows if necessary. If the upgrade was unsuccessful (for example, a power outage interrupted the upgrade), repeat the procedure.

Upgrading the server module firmware

After you download the server module firmware update, the server modules can be upgraded individually or simultaneously.

To simultaneously upgrade multiple server modules:

1. Press **Print Screen.** The Main dialog box will appear.
2. Click *Commands - Server Module Status.* The Server Module Status dialog box displays.

NOTE: You can automatically upgrade any server module connected to your APC AP5602 2x16 CAT5 Analog KVM switch by selecting the *Auto-upgrade* box in the Server Status dialog box.

3. Click one or more types of modules to upgrade. Click *Upgrade*.
4. Click *OK* to initiate the upgrade and return to the Server Status dialog box.

Appendix B: Technical Specifications

Table B.1: Product Specifications

AP5602 KVM Switch Product Specifications	
ARI ports	
Number	16
Types	PS/2, Sun Mini-Din, USB, 13W3 and serial server modules
Connectors	RJ-45
Sync Types	Separate horizontal and vertical
Plug and Play	DDC2B
Video Resolution	Analog Port Maximum 1600 x 1200 @ 75 Hz
Update Port	
Number	1
Type	Serial RS-232
Connector	DB9 Male
Analog Port Sets	
Number	2
Type	PS/2, USB, VGA and ACI
Connectors	PS/2 miniDIN, 15 pin D, RJ-45
Dimensions	
Dimensions (H x W x D)	4.45 x 43.18 x 27.94 cm
1U form factor	1.75 x 17.00 x 11.00 in.
Weight	3.6 kg (8 lb) without cables
Heat Dissipation	92 BTU/Hr
Airflow	8 cfm
Power Consumption	12.5 W
AC-input power	40 W maximum

Table B.1: Product Specifications (Continued)

AP5602 KVM Switch Product Specifications	
AC-input voltage rating	100 to 240 VAC Autosensing
AC-input current rating	0.5 A
AC-input cable	18 AWG three-wire cable: IEC-320 C13 to 5-15P and IEC-320 C13 to IEC-320 C14.
AC-frequency	50/60 HZ
Temperature	10^{o} to 50^{o} Celsius (50^{o} to 122^{o} Farenheit) operating -20^{o} to 60^{o} Celsius (-4^{o} to 140^{o} Farenheit) nonoperating
Humidity	20 to 80% noncondensing operating 5 to 95% noncondensing nonoperating
Safety and EMC Approvals and Markings	
	UL, FCC, cUL, ICES-003, CE, VCCI, GOST, IRAM, C-Tick, MIC
	Safety certifications and EMC certifications for this product are obtained under one or more of the following designations: CMN (Certification Model Number), MPN (Manufacturer's Part Number) or Sales Level Model designation. The designation that is referenced in the EMC and/or safety reports and certificates are printed on the label applied to this product

Appendix C: Sun Advanced Key Emulation

Certain keys on a standard Type 5 (US) Sun keyboard can be emulated by key press sequences on a PS/2 keyboard. To enable Sun Advanced Key Emulation mode and use these keys, press and hold **Ctrl+Shift+Alt** and then press the **Scroll Lock** key. The *Scroll Lock* LED blinks. Use the key press sequences in Table C.1 as you would use the advanced keys on a Sun keyboard.

Table C.1: Sun Key Emulation

Sun Key (US)	PS/2 Key to Enable Sun Key Emulation
Compose	Application(1)
Compose	keypad
Power	F11
Open	F7
Help	Num Lock
Props	F3
Front	F5
Stop	F1
Again	F2
Undo	F4
Cut	F10
Copy	F6
Paste	F8
Find	F9
Mute	keypad /
Vol.+	keypad +
Vol.-	keypad -
Command (left)(2)	F12
Command (left)(2)	Win (GUI) left(1)
Command (right)(2)	Win (GUI) right(1)

(1) Windows 95 104-key keyboard.
(2) The Command key is the Sun Meta (diamond) key.

For example: For **Stop + A**, press and hold **Ctrl+Shift+Alt** and press **Scroll Lock**, then **F1 + A**.

These key combinations will work with the USB server module (if your Sun system comes with a USB port) as well as the Sun VSN and WSN server modules. With the exception of **F12**, these key combinations are not recognized by Microsoft Windows®. Using **F12** performs a Windows key press.

When finished, press and hold **Ctrl+Shift+Alt** and then press the **Scroll Lock** key to toggle Sun Advanced Key Emulation mode off.

Special considerations for Japanese Sun USB and Korean Sun USB keyboards (USB server modules only)

Japanese Sun USB and Korean Sun USB keyboards assign usage IDs for certain keys that differ from standard USB usage IDs. If USB server modules are attached to your Sun servers, the Han/Zen and Katakana/Hiragana keys on Japanese Sun USB keyboards and Hangul and Hanja keys on Korean Sun USB keyboards must be accessed using alternate keystrokes.

Table C.2 lists the keyboard mapping that will take place when a USB server module is used in this setting.

Table C.2: PS/2-to-USB Keyboard Mappings

PS/2 Keyboard	USB Usage ID	Sun USB Keyboard	Korean Sun USB Keyboard	Japanese USB Keyboard
Right-Alt	0xE6	AltGraph	Hangul	Katakana/Hiragana
Windows Application	0x65	Compose	Hanja	Compose
Hangul	0x90	N/A	N/A	N/A
Hanja	0x91	N/A	N/A	N/A
Katakana/Hiragana	0x88	N/A	N/A	Han/Zen
Han/Zen	0x35	` ~	` ~	N/A

Appendix D: Technical Support

For assistance with any installation or operating issues you encounter with your APC product, contact APC Technical Support. Contact information is available at the APC Web site, www.apc.com/support.

To resolve an issue:

1. Check the pertinent section of this manual to see if the issue can be resolved by following the procedures outlined.
2. Check the APC Web site, www.apc.com, to search the knowledge base or use the online service request.
3. Call APC Technical Support.

www.apc.com

For Technical Support:

www.apc.com

APC: 990-3267
590-801-501A